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OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XIX MUSKOGEE, OKLA., NOVEMBER, 1926 NUMBER 11

SYMPOSIUM:

CONSTITUTIONAL DISEASES VS DENTAL DISEASES

Read before the Section on General Medicine, Neurology, Pathology and Bacteriology, Annual Meeting, Oklahoma State Medical Association, Oklahoma City, June 22, 23, 24, 1926.

SYSTEMIC DISEASES OF FOCAL ORIGIN WITH ESPECIAL REFERENCE TO DENTAL CAUSES

W. W. RUCKS, M.D.
OKLAHOMA CITY

It has long been an aphorism of mine that if a man wishes to approach and go through his old age gracefully, he must rid himself of the handicap of infection—that he may be able to carry the burden during the years of his stronger manhood is true, but as his declining years approach and his natural vigor begins to wane, the infection will weight him down and he will be subject to the many ills that attend old age, most of which could have been avoided by eradication of focal infections, for it is undoubtedly true that focal infections to a great extent are factors in the etiology of the degenerative diseases, among which, arterial degeneration with its many complicating conditions of both mind and body is chief.

Some one has observed that a man is as old as his arteries but this observation was made before the days of intensive study of the role of focal infections. We might now say that the age of a man's arteries depends upon the amount and character of infection which he has wittingly or unwittingly carried through his years.

In order that we may live long and happily, and that we may approach our old age gracefully, it is necessary to live moderately and to free ourselves from focal infections.

The idea of focal infection is not new. Benjamin Rush in 1818 reported a case of rheumatism of the hip cured by extracting a carious tooth. The principal of focal infection as a cause of acute and chronic diseases has now been fully accepted. It is made the basis for a large proportion of present medical practice, estimated as high as 70 percent. Credit for placing it on a firm scientific foundation goes to Billings and Rosenow. Billings defines a focus of infection as "A circumscribed area of tissue infected with pathogenic organisms."

Foci may be located anywhere in the body, most often in the mouth and its communicating cavities or nearby lymph structures. At times a focus may be located in a most unexpected quarter. The tonsils as a focus is easily recognized and it is now hard for an offending tonsil to escape. The teeth perhaps are more often on the pathological border line than any other organ; and the list of crimes laid at their door is large and continues to grow. Many good clinicians advocate the removal of all suspicious teeth when active symptoms of focal infection are present. Dr. H. A. Cotton of New Jersey State Hospital at Trenton, reports improvement and cure in many psychotic conditions on removing infected teeth and he states that all impacted third molars and all devitalized teeth are infected. A great many pathogenic organisms have been found as offenders, those heading the list in frequency and importance, are members of the streptococcic and pneumococcic groups.

Systemic disease results when pathogenic organisms, their soluable toxins or their debris set up pathological changes in organs which may be contiguous to or far removed from the parent focus. Transportation occurs by hematogenous or lymphogenous routes, and the list of diseases caused is too large to be enumerated. I wish to give especial mention to heart disease.

Undoubtedly focal infection is the principal etiological factor in heart disease—

and this complication may occur at any age in life. In childhood the tonsils are the chief offenders and in adults not only the tonsils but the teeth and sinuses. If the tonsils were properly attended to, the teeth propely looked after and sinus infections promptly treated, it is likely that the incidence of heart disease alone would be greatly reduced.

The physician is naturally interested in the cause of disease and the cause of death. Organic heart disease today is the greatest cause of death. The death rate from diseases of known cause has been greatly reduced. Typhoid fever, yellow fever, diphtheria are nearly blotted out. Scarlet fever has recently been robbed of its sting. Malaria is coming under control. The death rate from tuberculosis has been greatly reduced, but that from heart disease is greatly increased. On an average one death in every ten is due to tuberculosis, and one in every six is due to heart disease. It is estimated that 150,000 persons die of heart disease in the United States annually.

From the draft which perhaps gives the best index of the total number of cardiacs in the entire country it is estimated to be as high as four million. Not only do we have a high mortality from this large number, but there is at least a 50 percent reduction in efficiency and this is particularly unfortunate for the worker who must depend on his daily earnings, who in his endeavor to keep pace with the more fortunate in health, invariably precipitate decompensation, long illness, increased expenses and death.

The three great causes of this disease are, focal infection, syphilis and the degenerative diseases. The latter class may be largely due to focal infections. It is estimated that tonsillitis, rheumatism and chorea are probably responsible for sixty percent of chronic heart diseases — and chorea and rheumatism are themselves considered largely due to infections of focal origin and the frequent accompanying heart disease only another of the effects resultant from this cause. To what extent dental infections contribute to this, I am unable to say but that it plays no inconsiderable part is well recognized; and especially does it have to do with the degenerative changes of adults mentioned as one of the major causes of heart disease.

To correctly diagnose and correctly treat a failing heart is not sufficient. The bigger thing is the prevention of heart failure. One important way to do this, and perhaps the most important way, is through the field of focal infection. I am glad that we are co-operating as never before with the dentists. Focal infection is receiving so much consideration now, it is likely that the next decade or two, will see a great reduction in the incidence of cardiac disease and with that will also be a decrease in the degenerative diseases expressed in arterial degeneration, hypertension, cerebral hemorrhages and paralysis. The list of pathological conditions associated with disease of the heart and blood vessels is so large that volumes have been written concerning it. All this may arise from one infected tooth. The removal of the parent source of infection so frequently does not relieve the situation unless done very early for the secondary implantation has become a focus which must be dealt with independent of its primary source and may continue to flourish long after the parent infection has been done away. This would mean the transmigration of bacteria from the original source to a new field, setting up a new focus with its attendant pain and discomfort.

This may express itself as an endocarditis, a pericarditis, gastritis, gastric and duodenal ulcer, cholecystitis, appendicitis, prostatitis, arthritis, neuritis etc., as true secondary infections or we may have absorption of toxine from the original site and this may cause a psychosis or stiffness and tenderness of varying degree and duration, disappearing and returning in another locality often at short intervals. This is not a secondary infection though it is a focal infection and in this class are to be had the brilliant results in aleviation of general symptoms on removing the source of toxemia but not so when a true secondary focus has been set up. Before results from treatment are obtained it too must have due attention and be eradicated if possible and if this secondary foci are inaccessible we should be in a position to fully discuss them with the patient so neither the patient nor the doctor will be disappointed, but forewarned of the results to be expected—for too often promises of relief from extraction of teeth or removal of tonsils are made and fail to materialize.

This indicates the necessity of a complete and thorough general examination in all systemic infections believed to be of focal origin as true secondary pathological conditions may have been set up which will not be influenced by the removal of the primary lesion.

The absorption of toxins from teeth or tonsils may excite an untoward influence on the course of other disease entities from which a person may be suffering. Browning in the Texas State Journal of March, 1926, discusses the effect of dental infection in tuberculosis in which he states as his belief that flooding the system with bacteria or their toxins is sometimes responsible for an acute exacerbation of the tuberculous condition and frequently for the myocarditis associated with this tuberculosis. As mentioned above, Cotton states that he has by attention to oral sepsis, especially the teeth, been able to discharge 78 percent of patients admitted to the New Jersey Hospital for the insane, whereas the previous proportion of discharges to admissions had been 43 percent. Langsworth in his study of cases at the University of California found chronic infection in 84 percent of ulcer patients, 66 percent of subacute arthritis, 73 percent of chronic arthritis and in 100 per cent of gall bladder cases.

Duke in tabulating 1000 medical cases in which patients suffered from some form of chronic disease found a marked degree of oral sepsis in 66 per cent. Thomas in Boston in a similar number of cases found alveolar abscesses in 88 percent. Potter, of Columbia University, New York, gives a list of 31 diseases to which dental sepsis contributes. In the year of 1925, I have personally observed 316 cases mostly chronic, in which oral sepsis was present in 210 and in many was an important etiological factor.

These cases included:

1—Appendicitis
2—Cholecystitis
3—Arthritis
4—Pyelitis
5—Neuritis
6—Nephritis
7—Goitre
8—Endo-carditis
9—Myo-carditis
10—Hypertension.

This is only a partial list of the diseases influenced or caused by focal infections but is sufficient to show the great importance focal infection bears to general diseases, both chronic and acute.

Focal Infection in Relation to Systemic Disease

F. J. Reichmann, D.D.S.
Oklahoma City

In presenting this subject to you physicians I feel that I must follow out the accepted principals of the dental profession as I see them, being conservative and giving nothing to you that is not accepted by a majority of dentists.

An understanding of dental infection as seen by the dentist can be had only after you place yourself in the position of that dentist and try to see his side.

The aim of dentistry is to conserve health and happiness, through the prevention of dental disease; the conservation of teeth through repair and restoration; and to remove harmful pathologic conditions when they are present.

The basic principles of dentistry depend upon the peculiar anatomical structures of the teeth and surrounding tissues, the defensive reactions of the body, and the ingenuity of the profession in devising operations which are compatible with the individual.

I think it apropos at this time to review briefly that part of anatomy which has a direct bearing on our subject, and also the special defensive reactions of the teeth which are peculiar to them only. These will be illustrated with lantern slides in a few moments.

The dentine is a hard ivory-like structure containing minute tubuli running from the pulp chamber to the enamel or cementum. These tubuli contain protoplasmic prolongations of the odontoblasts, which are the dentine forming cells. There is no nerve or blood supply in the dentine. Chemical or mechanical irritation of the distal ends of these protoplasmic prolongations stimulate the odontoblasts in a healthy pulp to form more dentine, and the pulp recedes from the point of assult. At the same time there is an additional calcification of the primary dentine, which

forms a barrier having a tendency to retard the progress of bacteria along the tubuli.

The cementum is a hard bone-like structure that covers the root of the tooth. Its blood and nerve supply is derived from the peridental membrane. No direct communication between the cementum and dentine has been demonstrated.

The peridental membrane is a fibrous structure, with a rich vascular and nerve supply, which encircles the root in its entirety. It is attached to the cementum by means of fibers which bear the same relation to the cementum as the periosteal fibers of Sharpey do to bone. Its vascular supply is derived from the alveolar process opposite the root apex, over the alverolar crest, and thru the wall of the alveolus or tooth socket.

The tooth pulp is a well protected, highly specialized but very embryonic structure. It contains blood and lymph vessels, and nerves which enter through the root apex. It is composed of an embryonic stellate reticulum and odontoblasts.

Now we are prepared to take up the root canal problem. For years this has been a much discussed subject. That devitalized teeth are more susceptible to infection is an established fact. But to assume that all devitalized teeth are infected is false. I shall attempt to show you why it is possible to remove the pulps of teeth and have them remain healthy. If a pulp is removed under surgically clean conditions (and this can be done) and the apical foramen sealed without infection being forced into the peridental membrane, there is no reason to doubt the rationality of the operation. On account of the difficulties of this operation the failures are numerous.

It is necessary to remove every trace of pulp tissue as far as the dento-cemental junction, enlarging the canal and sterilizing it thoroughly. Then a tight root canal filling that will not shrink must be packed into the canal. This is impossible in all except completely formed roots having straight or nearly straight root canals. The chances for failure are increased in multi-rooted teeth, nervous or irresponsible patients, teeth which have crooked roots, or root canals that are difficult of access. If a careful operator, with a thorough knowledge of modern root canal operative technic, attempts this operation only on favorable teeth in patients having a high resistance, who are willing to sacrifice time for thorough treatment and will co-operate in the operation, the percentage of successful cases will be surprisingly high. This is one of the finest and most delicate of surgical operations and requires special ability. Root canal therapy has earned a bad reputation because it has been misused, not because it is fundamentally unsound. It is not advised for patients having low resistance or evidence of systemic disease which makes it imperative that no chances be taken. This is true of a large percentage of your patients, while we see many that carry even severe looking foci of infection without any apparent inconvenience. So the dentist should be familiar with the patient's condition before attempting such an operation. I would like to spend more time on this subject, but more important things must be considered.

Dental diagnosis is one of the most delicate of specialties. It calls for every atom of knowledge known to medicine and dentistry, and an active brain to co-relate the data and work out a conclusion that will be most compatible to the health and well-being of the patient. The problem would be simple if teeth were not very useful structures. It is better to remove the tonsils and appendix of a patient needlessly than to remove one serviceable tooth needlessly, for the patient will miss that tooth for the remainder of his life. The diagnostician must not hesitate to condemn infected teeth, however, and even slightly doubtful ones when the condition of the patient warrants the sacrifice. This decision depends upon:

1. The condition of the patient.
2. Other foci of infection found.
3. Vocation. Avocation.
4. Restoration possible.

The methods of dental diagnosis, in approximate order of importance are:

1. Inspection.
2. Exploration.
3. Dental history.
4. Radiograms.
5. Special tests for pulp vitality.
6. Palpation.
7. Percussion.
8. Transillumination.

A thorough knowledge of the anatomy, histology and physiology of the teeth and

all surrounding structures is necessary to successfully use any of these diagnostic aids. A knowledge of dental pathology and the basic principles of operative dentistry is necessary to interpret any pathology found.

At this time I wish to say a word about the limitations of the X-ray in dental diagnosis. It is *one aid* in dental diagnosis, and is not the last word. The radiogram does not reveal infection, but the result of infection when that result is manifested by osteoclasia or condensing osteitis which is not hidden by the root apex or other structures.

The radiogram does not reveal the severity of infection, because the virulency of the organism is not a controlling factor in the extent of change of bone structure. It is my belief, and that of most dentists, that a large definitely circumscribed granuloma (produced as a *defense*, as all dental granulomata are,) is less apt to be a focus of infection than a small diffusely outlined osteoclasia or condensing osteitis.

I have used the term "focus of infection" for the first time. The American Medical Dictionary says that a focal infection is; "An infection in which bacteria exist in circumscribed confined colonies in certain tissues, and from these are sent out into the blood stream."

Many apical granulomata have been proved to be sterile. In these cases the resistance of the patient has sucessfully combatted the infection. These cases are found only in very healthy patients. In a few cases granulomata have disappeared after root canal treatment. We do not often attempt this, as the result is very doubtful.

It has been proven quite definitely that patients having a high resistance to infection have also a very extensive zone of rarifaction about infected teeth. This rarifying osteitis with a definite fibrous capsule is a protection. It is true that if this same patient loses his high resistance through an overload of some kind there is a condensing osteitis instead of a rarifying osteitis about the infected zone. In cases of low resistance the rarifaction is smaller and more diffuse in outline. The so-called dental granuloma is not a true neoplasm, but is a defensive membrane. It has been described as a mechanism for protecting the individual by segregating and destroying the organisms at their source. From the facts just mentioned we should remove teeth having periapical rarifaction about them as a prophylactic measure, and should search very carefully for apical pathology in patients having a low resistance, as we must not expect large rarified areas in these cases. Pathology is often found more easily when the resistance is high because the reaction to insult is very marked. It is the difficult cases that give the greatest promise of relief if sucessfully worked out.

Gingival infections showing marked reaction are easily found and respond favorably to treatment. Those types having low resistance do not cause the patient any inconvenience, and there is no flow of pus. This is the type of gingival infection that is most liable to cause systemic disturbance. There is another type of case which is characterized by rapid resorption of the alveolar process and loosening of the teeth. This process itself is regarded by many as protective. It does not respond to treatment as the teeth are being exfoliated as foreign bodies. The treatment is removal of all teeth at once to save the process for artificial dentures.

The relation of oral infection to systemic disease has long been recognized by dentists. W. D. Miller in 1890 wrote: "It is a well known fact that the inflammatory processes in the tooth pulp, pericementum, and gums lead not only to obstinate neuralgias but also to severe diseases of the eye, ear, to eruptions of the skin, etc." There is evidence that the following diseases have been definitely proven to be caused in many cases by hematogenous metastasis from a primary focus of infection:

Acute endocarditis
Acute pericarditis
Acute pluritis
Acute peritonitis
Acute infectious arthritis
Acute tenovaginitis
Acute bursitis
Erythema nudosum
Purpura hemorrhagica
Bronchopneumonia
Acute appendicitis
Acute enteritis
Acute colitis
Acute gastric and duodenal ulcer
Acute conjunctivitis
Acute keratitis
Acute iritis
Acute uveitis
Acute retinitis
Acute optic neuritis
Acute thyroiditis
Acute pancreatitis
Acute nephritis
Acute pyelitis
Acute neuritis
Acute myelitis
Acute poliomyelitis
Acute meningitis
Herpes Zoster
Acute chorea
Acute myositis
Acute myocarditis
Osteomyelitis

Chronic diseases are also attributed to focal infection, but this cannot be so de-

finitely proven because they do not clear up after removal of the focus without other treatment. Anemia, anaphylactic reactions and even neurasthenia have also been attributed to this condition.

Since there are other common locations for foci of infection besides the teeth it is necessary that every case of suspected focal infection be thoroughly examined. This requires careful examination of the nasal passages and sinuses, the throat, abdomen, genito-urinary system, and rectum. This is to include any aids to examination necessary, such as radiographic, bacteriological, etc. The clinical history should aid in determining where this examination should be carefully rechecked, but it should be complete in every case. After this is done the dentist should be informed of the results of the examination, he should be made familiar with the patient's general condition, and then asked to render his report of the mouth condition. In this way only can we work in harmony to get the best results for the patient.

Just a word about sensational collections of cases. It is easy to collect truly startling data regarding dental infection. By selecting a hundred cases out of several thousand one can compile data that will prompt us to have every tooth on our own heads removed without bothering to have an examination. And this sensational work is being done by those who love to rush into print. Doubtful methods of compiling data by pseudo research workers, who insist upon getting the result they predetermined should be true, is confusing, and our literature is full of it today. If you wish to read reliable dental literature along this line, I suggest articles by such men as Black, Hartzell, Rickert, Hatton, Buckley, Noyes, Bunting, Lyons and Grieves.

Let us trace briefly what happens when infection enters the tooth pulp. There is a hyperemia, causing odontalgia. The pulp finally dies, probably through strangulation, and the infection is essentially a lymphangitis in the beginning. So the infection passes directly into the bone. At this time the pain is relieved by pressing on the tooth and it is not sensitive to percussion. This means that the peridental membrane which contains the tactile sense of the tooth, is not involved. Efficient root canal therapy at this time in a favorable case is a success. If untreated the inflammation in the bone continues, causing absorption, hyperplasia, or necrosis. There is no abscess, as there is no pus formation, the defense being essentially a process of walling off the organisms, which however are being constantly replenished by the now necrotic pulp. When the pathology spreads it involves the peridental membrane, causing the tooth to feel high, and it is very sensitive to percussion. When the peridental membrane is divided from the root and the cementum becomes necrotic, pus formation begins and root canal therapy is impossible. Then the apex of the tooth is truly "dead" and removal is indicated.

Now let us briefly evaluate the focal infection theory as accepted by most dentists. We do not discount the seriousness of mouth infections, but we must insist upon the correct evaluation of other foci of infection. Hartin in the ANNALS OF SURGERY, October, 1922, in a tabulation of sources of bacteria recovered from the blood by cultural methods does not cite one case in which the mouth was the primary focus. According to many workers acute middle ear and mastoid infections are much more prone to metastasis. Irons and Brown[1], in studying the etiology of iritis say that condition is much more prone to be caused by either of the above mentioned conditions.

In reading the data compiled by Rosenow, and others who have had thousands of teeth cultured in their laboratories after having been extracted in the dental department, please remember that the chances for error are tremendous. It is my belief that it is physically impossible to extract a tooth without contaminating the root apex, and this is borne out by careful cultural work, done through the alveolar process before the tooth is removed, by Rickert and Lyons. Rosenow himself admits that he reported the data submitted to him by his laboratories, he having practically nothing to do with the technic used. Shall we reduce our art to bacteriology, or shall we recognize that there is more to be considered? Dr. Crile[2] beautifully compiles the causes of disease. Among other interesting things he says: "Prolonged consciousness, muscular action, emotion, mental exertion, foreign protein, infection, even pregnancy, cause identical histological changes in the structure of each organ concerned in the transformation of energy, and in the neutralization and the elimination of the resultant acid end products."

I believe that the theory of localized foci of infection in the mouth is a definite thing, but the extent to which it may be responsible for general systemic disease is different for each case, and cannot be worked out in a routine way in a laboratory.

I believe that in many cases the micro-organisms of oral sepsis become active *after* the bodily resistance has been lowered; that the very bad mouth condition of our hospital patients is the result of disease, not the cause.

Last of all, let me plead with you. Let me intercede for a useful and necessary organ of our bodies, the organ of mastication. With theories and scary howling all about us, like the label on a patent medicine bottle, let us be calm and reason things out before we mutilate a human body by taking away a useful part that can never be replaced as satisfactorily as it was. Let us consult and save the patient's body as well as his health. I beseech you, don't place a premium on the dental extremist. Please refrain from ordering a patient to have his teeth removed until you have done everything possible to save them. Be sure of your diagnosis, and have the courage to carry it out for the good of the patient and the comfort and happiness of the years you can save for him. And work with us to that end and I pledge you that we dentists will bear our share of the burden.

1. Journal American Medical Association, November 24th, 1923.

2. Journal American Medical Association, 1915, Jour. Surg. Gyn. and Obs.

Focal Infections in the Nasal Sinuses

James C. Braswell, M.D.
Tulsa

Clinical studies have shown that focal infections are present in demonstrable forms in a high percentage of the sick and the etiological factor can be frequently traced to an apparently innocent nasal sinus.

Rush in 1801 called attention to some rather remarkable results following the extraction of decayed and diseased teeth. Miller in 1889 demonstrated that infections of the mouth may cause constitutional diseases. Billings and his co-workers forcibly called the attention of the profession at large to septic foci as sources of chronic infection conveyed by the blood stream. Rosenow demonstrated in minute detail the value of elective localization, and his studies have shown that foci of infection in a given case may harbor the same type of bacteria that is found in distant lesions.

Maxillary sinusitis of oral origin is now a common disease, and fully fifty per cent of the infections of the antra can be traced to diseased teeth. The relative frequency of ascending infection of the antrum of Highmore has compelled the rhinologist to investigate the teeth more carefully in his routine examination. Until recent years practically all of the infections of the antra were attributed to descending infection from the frontal sinus and ethmoidal cells. Black and others emphasize the importance of dental lesions in ocular diseases.

The incidence of focal infection in the nasal sinuses is far more frequent than members of our chosen profession are prone to realize and there is no part of the body where a focus may be more securely hidden from detection of the casual observer.

The infection may travel by absorption of toxins and by invasions of the blood stream by bacteria with secondary localization or by contiguity of tissue.

The general effect upon the patient from absorption in acute infections of the nasal accessory sinuses depends largely on the amount of drainage in the sinus involved. The symptoms may be general if there is free drainage, whereas, the symptoms are usually local and pronounced where the drainage is blocked.

In chronic infections of the accessory sinuses the nature of the drainage is usually the determining factor in the production of symptoms. The amount of pus is not an essential factor as infections with the production of very small amounts of pus produce more marked symptoms. The mucous membrane too frequently constitutes a focus from which toxic substances are absorbed producing symptoms. The harm from foci of the infection must be considered as being due to the absorption of toxic bacterial products, as well as to the entrance of the living bacteria into the circulation.

In order to arrive at a correct diagnosis it is essential that the rhinologist and the dental surgeon work more closely in the

investigation of maxillary sinusitis. Dunning is of the opinion that it would be best in most all cases for the dentist when he discovers a case of maxillary sinusitis to turn over the case to the rhinologist as many of the supposedly ascending infections are in reality due to descending infections. At the same time it is essential that the rhinologist know in every case of antral infection the condition of the teeth and the oral tissues.

The diagnosis of infections of the accessory sinuses is usually relatively simple. It is essential to secure good, clear X-ray films in order to definitely determine the extent of the infections of the sinuses.

No attempt is made to discuss the mode of treatment, however, the essential factor in treating infections of the nasal sinuses is to secure good drainage even though it may be necessary to sacrifice some of the apparently normal nasal tissue.

This discourse has been so elemental that I cannot do better in closing than to quote a familiar passage from "Mother Goose."

"Three men went out to sea in a bowl
If the bowl had been stronger
My tale had been longer."

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Relationship of Constitutional and Dental Diseases

Ira E. McCarty, D.D.S.
Tulsa

I am mindful of the honor in being asked to appear before the Oklahoma State Medical Association, and take part in the presentation of this Symposium on the very important subject, "The Relationship of Constitutional and Dental Diseases," and will offer a few observations from clinical experience, with the thought of attracting the attention of those members of both the medical and dental professions, who seem to have not arrived at the realization that the oral cavity and it's structures are a part of the human body worthy of serious consideration when endeavoring to determine the causal factors of systemic lesions.

Professor Merritt, of Cornell University, says: "That an uneducated man has two mental pigeon holes, one called absolute truth, and the other absolute falsehood." "Every idea that comes to such a man, must be put into one pigeon hole or the other." A scientist or research man has a long row of pigeon holes. That, at one end, is labeled *absolute truth.* It is always empty. That, at the other end, is labeled *absolute falsehood* and it too is always empty.

Every finding that comes to such a man is placed in the intervening pigeon holes and as studies and observations are made he moves the results closer to one end or the other. They are only approximate, but constant research makes the approximation closer and closer. He is an incorrigible skeptic, and until he has exhausted all the possibilities of going wrong, he can never be quite sure of going right.

Such men as Billings, Rosenow, Price, Shearer and others, through long years of research, observations and experiments, have demonstrated that dental infections are an important contributing factor in the causation of many degenerative diseases; as nephritis, myocarditis, endocarditis, arthritis, neuritis, gastric ulcer, cholecystitis, appendicitis, neurasthenia, psychoneurosis, iritis, retinitis, myositis, etc. Duke, of Kansas City, gives case histories showing that chronic foci of infection within the mouth, increase the severity of unrelated infectious diseases, such as syphilis, tuberculosis, etc. He says: "That there seems to be a general deleterious effect produced, and the patients lose weight and show susceptibility to intercurrent diseases." "When the oral foci is eliminated the patient's improvement is very marked."

We all know that from a few hours after birth and until death, every individual's mouth contains a great variety of bacteria, *some* of which are *harmless* while others are disease producing, under the proper conditions of environment and susceptibility.

There are a few varieties of special interest in this connection. The streptococcus viridans, pneumococcus, various members of staphlococcus group and fusiform bacillus. The streptococcus forms about 50 per cent of the bulk of microorganisms in the oral cavity. The mouth having an abundant blood and lymph sup-

ply, it affords a ready gate-way to the general circulation.

In 1909, Sweitzer, of Berlin, demonstrated a direct connection between the pulps of teeth and the lymphatics of the neck. This was later confirmed by Dewey of Chicago, who used a dye to inject into the tooth pulp and found that it passed on into the glands.

Price, found in c u l t u r i n g several thousand teeth with pulp involvements, more than 95 per cent to be infected with diplococci or streptococci, (mostly green producing or viridans).

Dr. Chas. Mayo says: "That acute and chronic infections (those bacterially caused) account for 87 per cent of all deaths."

Considering these facts, other available information, and the knowledge that most adults and many children have broken down and diseased dental tissues, which are all potential sources of focal infection, it becomes quite clearly the duty of every physician to give the most careful and earnest consideration to the oral tissues of every patient.

This can best be accomplished by co-operation between the physician and a dentist, capable of diagnosing dental pathology and correctly interpreting dental radiograms. The dental radiogram is of utmost value in diagnosis (if the doctor has some knowledge in addition to that obtained from the X-ray salesman).

Occasionally pathology is read into radiograms, but more often the true condition is not fully revealed, due to the density of over-lying bone and tooth roots, and the line of the direct ray missing a portion of the area, resulting in improper exposure.

Degeneration of pulp tissue (excepting calcific degeneration) is rarely revealed radiographically, and must be supplemented by all other aids at our command, such as the electric vitality test, thermal test, percussion and history, both local and general.

Patients presenting with edentulous mouths complaining of neuralgia and headache or other symptoms of obscure origin should be radiographed, to reveal the persence, if any, of root fragments and residual areas.

The presence of unerupted and impacted teeth, which are a vastly under-estimated source of trouble, root fragments and residual areas of infection following incomplete surgery, or tooth pulling, as generally practiced, are readily revealed.

Gardner, reports on examination of 28,000 patients in the Mayo Clinic in one year, that 30 per cent of these patients had roots left in the mouth. Four per cent had impacted or unerupted teeth, 35 per cent had residual granulomas.

Over a period of twelve years, Shearer found on examination of 1,800 edentulous mouths, 527 having either sharp knife-edge ridges of bone or others resembling the edge of a saw blade, all giving a great deal of trouble and necessitating re-operation.

From the abundance of available evidence, it becomes quite apparent that the most careful surgery should be employed in the mouth in all cases of removal of teeth and accompanying oral pathology.

My own experience, daily proves this to be true and I have selected from a variety of material the following reports, only, because of the more complete data available from the attending physician.

Mrs. A., age 39, was first seen May 2, 1923, at which time she was under observation in St. Anthony's Hospital for several weeks.

The salient features in this patient's history and examination are: her family history is free of cancer, goitre, mental disease, transmissable tendencies and stigma of degeneration, with the exception that her mother and her mother's two sisters were of a nervous disposition subject to very severe headaches, and these two aunts died of paralysis.

Patient is a well developed, robust looking woman, with eyes so prominent as to suggest exopthalmia. She enjoyed good health until 15 years ago, during the last 15 years she has had several abscessed teeth and slight irregular leukorrhoea. Five years ago she began to have mild attacks of "rheumatism", feeling of stiffness and soreness for a few days at a time in neck, back, arm and thigh muscles.

In 1918 and again January, 1923, she was ill, a few days, with influenza, no complication. During the last four years and especially the last two years, has been nervous, and cries easily. During the last three years has been subject to attacks of vertigo.

PRESENT COMPLAINT

During the last five months has lost 15 pounds, has dyspnea on exertion and asthenia. During the last four weeks has had frequent cardiac consciousness, fluttering, beating slow and hard, especially after meals, and at night in bed. Constipated and nervous during this same period.

PHYSICAL EXAMINATION

Eyes: Pupils equal irregular, reaction normal to light and accommodation, no optic nerve or other eye trouble.

Tongue: Slightly coated, otherwise normal.

Teeth: Bad.

Chest: Breasts and lungs normal.

Heart: Size and position normal, aortic second sound short, sharp and accentuated, accompanied by distinct pulsation of carotid arteries, heart sounds otherwise normal, no murmur.

Skin: Normal, no redness, no dermography, no thyroid collar.

Neck: Normal, no enlargement of thyroid.

Tendon Reflexes: All slightly plus.

Mentality: Quick, nervous, fearful, otherwise normal.

Radial Pulse: Normal except rate, prone at rest 82, sitting at rest 92, standing at rest 104, after slowly walking around room 1-4 hour, 130, no deficit.

Blood Pressure: Left arm, Systolic 120, Diastolic 60. At times patient has attacks of nervousness, tearful excitability accompanied by tachycardia and fine rapid generalized tremor.

Fluoroscopic Examination: Chest and abdomen revealed no abnormality.

Basal Metabolism: (Tissot) 3 determinations, normal.

Blood: Red cells and hemoglobin normal, on admission leucocytes were 10,000, differential normal. Ten days later, leucocytes 7,000.

Urine: On admission the 24 hour output was insufficient, 550 c.c. Fixation of gravity at 10.20, considerable albumen, no glucose, no casts.

Blood: Sugar normal, nonprotein nitrogen 30 per cent above normal on admission, one week later 15 per cent above normal and at time of discharge 5 per cent above normal (taking 30 mg. per 100 c.c. as normal).

The patient was seen at intervals of several weeks after she left the hospital until July, 1293, during this period her condition was apparently normal, and she felt better than she had in years.

In August, she was seen at her home, in consultation at which time she was gravely ill with typical symptoms of renal insufficency—uremia.

Diagnosis:

1. Chronic focal infection (probably teeth).
2. Chronic nephritis (probably from focal infection).
3. Chronic myocarditis.

A recent note from the doctor says: "Nothing in the course of this case to the present time indicates to me reason for revision of my primary diagnosis. I feel quite sure this woman did not have thyroid disease at any stage of her illness."

Early in 1924 a diagnosis of diseased thyroid was made and thyroidectomy performed. Recovery from operation was satisfactory, but with no improvement in general condition. Three months later the operating surgeon suggested tonsillectomy, this was not done.

In July the patient presented in my office with full set of dental radiograms, disclosing marked destruction of apical areas, some condensing ostitis and gum infection. The mouth was operated, followed by rapid relief from all symptoms and complete recovery. She has gained 22 pounds in weight. I saw her in April 1926, when she said she was enjoying good health.

No. 2 Patient: E. A. C. Age 35.

Date: February 26, 1924. The patient came to me complaining of soreness of right eye.

Family History: Negative.

Past History: Childhood diseases. Has had several attacks of tonsillitis.

Present Complaint: On February 25th, the patient got up in the morning with pain and soreness of the right eye.

Examination: Marked ciliary injection of the right eye. Iris rigid and dilated under atropine slowly. Advised X-rays be taken of teeth.

Patient put on 1 percent solution of atropine every three hours and hot compresses to the eye. The X-ray showed three teeth abscessed and the patient was referred for extraction.

I found some gingival infection in addition to the three dead teeth, which was cleared up, the teeth removed and patient sent back to his physician, who continued treatment for about ten days, without improvement. The patient was then sent back to me for further examination, when I found, on percussion, a dead bicuspid which had not changed color and was radiographically negative. This was removed and in three days, the pain had subsided and in one week the eye had completely cleared up.

No. 3. Patient: G. L. B. Age 72.

Attorney, presented himself in May, 1924, in a very run-down nervous condition, with a history of poor health for the preceeding six months. He complained of digestive disturbance and chronic constipation, frequent nocturnal urination, pain in the lumbar region of the back and extreme nervous irritability.

Examination: Showed practically nothing excepting a very large prostate with the train of symptoms which usually accompany this condition. He denied any venereal history and his symptoms confirmed this.

He was put on hot enemata, prostatic massage, endoscopic treatment of the posterior urethra, with heavy solutions of silver, etc., and he made a very satisfactory recovery. He was seen at intervals until April 12, 1925, when he presented himself with a double epididymitis and the usual protective hydrocele on each side, he was running a little temperature, feeling a little chilly. He was put to bed with heat to the scrotum and the usual treatment instituted to promote drainage from the vesicles.

He improved very slowly for the next five or six weeks, when X-ray of the teeth was made and five teeth condemned as being sources of focal infection. These were removed and the week following their removal, showed a very rapid improvement with softening and reduction in size of both epididymes.

At this time, two weeks after removal of the teeth, the epididymitis has practically disappeared and taking into consideration the length of time during which the case was nearly at a stand-still before the teeth were removed and tne rapid recovery afterward, I think that the connection between the epididymitis and the focal infection is clearly shown.

No. 4. Patient: Mrs. H. Age 39.

Patient was seen March 18, 1926, in consultation.

History: Illness for the past two years, confined to the bed most of the time and treated for pulmonary tuberculosis.

Physical Examination: Patient was very nervous, unable to be out of bed. Complained of weak spells which she feared would be fatal. Indefinite pains in knees, back and head. There had been a progressive loss of weight and insomnia. Symptoms typical of goiter were absent. Pulse 120, heart would become very rapid and pulse thready.

Blood Pressure: Systolic 118, diastolic 84.

Blood Count: Leucocytes 9,800, red blood cells 3,160,000. Hemoglobin 52 per cent. No cardiac murmurs excepting at base on movements.

Lungs: Clear.

Pelvis: Negative.

Blood Wassermann: Negative.

There was a Vincent's infection of the gums with bleeding and offensive odor. There was evidence of other dental infection which was proved by the dental radiograph taken later. Previously to this time she had been told her teeth and gums were in a healthy condition.

She had been seen by two surgeons who advised an immediate thyroidectomy for exopthalmic goiter, which was not done.

On April 16, 1926, I was called and removed a few teeth. A week later we succeeded in getting her into the hospital where the operation was completed and patient was dismissed April 29th, with no further medical treatment.

Blood Color: 80 percent.

Basal Metabolism: Normal.

Pulse: 64 to 76. The only symptom was a tendency to fast pulse on exertion.

Her improvement was very marked, all symptoms cleared up and she was last seen May 6, 1926.

In closing I wish to thank Drs. John A. Roddy, D. O. Smith, H. P. Price, and H. B. Justice for their co-operation and assistance in supplying the data in these reports.

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William L. Shearer, M. D., D. D. S.

SOME TRAIL BLAZERS OF MEDICINE

PRESIDENTS ADDRESS

Delivered at the 29th annual meeting of the Santa Fe Railway medical and surgical society.

Albuquerque, New Mexico
September, 8-9, 1926.

FRED S. CLINTON, M.D., F.A.C.S.
TULSA

To have been elected President of the Santa Fe Railway Medical and Surgical Society, is an honor of which any member may be justly proud and on this occasion it is my pleasure to publicly acknowledge appreciation to the Chief Surgeon, Dr. J. P. Kaster and the membership.

The great antiquity and the vast achievements of medicine have recently aroused much historical interest in the activities of the disciples of Æsculapius.

Since medicine has opened the cloistered door and through team work sought to bestow its benefits on mankind, great things have occurred.

As the Chief Surgeon is to formally open the splendid Santa Fe Hospital in the city tonight, it might be of interest to mention the names of some of the first railway surgeons in America. Mr. James A. Jones of the F. W. and D. C. Ry. Co., by great industry has found no surgeon present at the birth of America's first railway —the B. & O. which began operation about 1827. However, he found in July 1834, Dr. James P. Quinn of Martinsburg, W. Va., was appointed railway surgeon for the Baltimore and Ohio Railway from Point-of-Rocks to Harper's Ferry. He was surgeon for nearly all of the railroad in the United States, though it comprised only 12.9 miles. In 1849, Dr. Apply of Cochocton, N. Y., was appointed surgeon for the Erie Railway at that place. He was its first surgeon, and the second railway surgeon in America, serving until his death in 1877—26 years.

The third known railway surgeon in America was Dr. John Lowman of Youngstown, Ohio—the first surgeon on the Pennsylvania Railroad, receiving his appointment in 1858 and continuing in service until death in 1888. The fourth known railway surgeon was Dr. W. R. Hamilton, of Pittsburgh, Pa., appointed in 1862—surgeon by Andrew Carnegie, then an official of the Pennsylvania Lines. Dr. Nixon—who in 1868 was the first chief surgeon, appointed to serve the Southern Pacific Lines. During his seventeen years service the first exclusive railway hospital in the world came into existence at Sacramento, California. Next followed a hospital on the Missouri Pacific Railroad and then the Santa Fe. Nearly all railroads recognize now the importance of hospitals to employees and employers. And other great industrial affairs are following in the wake. These fragmentary references to some of the pioneers in railway surgery in America suggest the richly romantic theme for this occasion—SOME TRAIL BLAZERS OF MEDICINE.

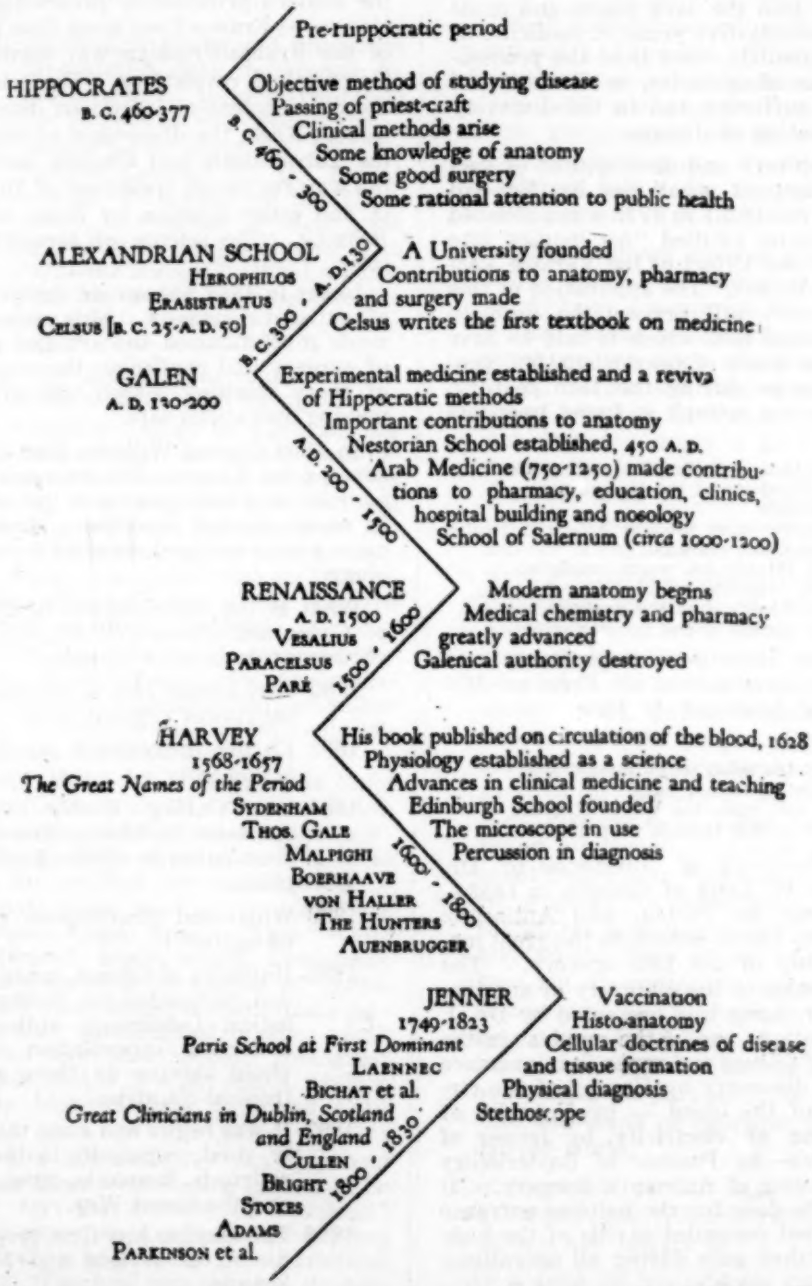
From remote antiquity, intelligent men have been interested in medicine. The two sons of Æsculapius went as surgeons to the Grecian army during the Trojan War, 1200 B. C. The Greeks were the real founders of Medicine and the cures of Æsculapius angered the Gods. He was — "the great master who joined the limbs of torn Hippolytus and brought upon himself the Thunder's wrath."

The great clinician Hippocrates, B. C. 460, was the father of orderly medicine, for he collected facts, made new observations and introduced rational principles of investigation and practice.

It does not fall to the lot of every man to make a great revolutionizing discovery, but in this day of the printing press and other numerous methods of communication, he may be led from darkness into light. A few have stood at pivotal points in history and blazed the trail out of the wilderness into the plain of knowledge. It takes concentration, conscience, conviction and courage to be a real trail blazer. Dreams are necessary but results require sterner stuff.

The Peaks of Medical History by Charles L. Dana—March 1926, gives the following graphic:

OUTLINE OF THE SIX PEAKS OF MEDICAL HISTORY
FROM HIPPOCRATES TO JENNER



Reprinted by permission from Dana's "Peaks of Medical History", published by Paul B. Hoeber, Inc., N. Y.

It would be impossible to mention all the names of the vast number who have made valuable contributions to medical progress. However, the following bright particular stars may be selected as having shed light into the dark places and made the last seventy-five years of medicine of greater scientific value than the preceeding number of centuries, in alleviation of pain and suffering and in the discovery and prevention of disease.

The discovery and development of vaccination against small pox by Edward Jenner (1740-1823) in 1798 was published in a pamphlet entitled "An inquiry into the Cause and Effect of the Variolæ Vaccine and Cowpox." The application of this one discovery will prevent the development of small pox, which is said to have caused the death of over 60,000,000 people in Europe during the 18th century. The following epitaph is found upon his tomb.

Within this tomb hath found a resting place
The Great Physician of the Human race—
Immortal Jenner.
Whose gigantic mind brought Life and Health
To more than half mankind.
Let rescued infancy his worth proclaim,
And lisp out blessings on his honored name;
And radiant Beauty drop one grateful tear,
For Beauty's truest friend lies buried here.

The first intentional ovariotomy was performed successfully by Ephriam McDowell, an American, in 1809.

We wish to:

"Part the mists which almost hide
A man of former days,
And spin upon the Wheel of Truth,
Some golden threads of praise."

The *Discovery* of *Anesthesia* by Dr. Crawford W. Long of Georgia in 1842—Bacteriology by Pasteur and Antiseptic Surgery by Lister constitute the great medical trinity of the 19th century. The relative value of the discovery of anesthesia by Dr. Long was presented by Dr. J. M. DaCosta as one of the greatest in the history of science and ranks in importance with the discovery by Harvey of the circulation of the blood — by Franklin of phenomena of electricity, by Jenner of vaccination—by Pasteur of Bacteriology and by Lister of Antiseptic Surgery. It opened the door for the painless entrance to the great concealed cavitis of the body and abolished pain during all operations.

The first published account of Cocaine as local anesthetic was in 1884 by Karl Koller, who used it in the eye and W. S. Halstead was the first to use it in general surgery.

Pasteur—(1822-1895) the father of bacteriology and the practical application of the modern principle of preventive medicine saved France from more than the cost of the France-Prussian war through his bio-chemical revelations. The science of the development of infectious diseases by Robert Koch, the discoverer of the Bacillus Tuberculosis and Cholera bacilli, led the way for serum treatment of Diphtheria and other diseases by Roux and Von Behring. The science of serology came later.

Lister in 1867 announced the principles of antiseptic surgery. This monumental work revolutionized the art and practice of surgery and challenges the admiration of every thinking person who glories in making operations safe.

In 1893 Conrad Wilhelm Roentgen discovered the X-rays. The wide use of this addition to science improved the diagnosis in many abscure conditions, made treatment more exact and revealed living pathology.

What is the chronological development of Cause and Prevention of some of the commoner decimating diseases?

1880 Carl Joseph Eberth discovered the bacillus of typhoid fever.

1882 Ehrlich introduced his diaso-reaction test.

1884 Geo. Gaffky, Koch's pupil and successor in Berlin, procured the first cultures of the Bacillus Typhosis.

1888 Widal and Chartemesse vaccinated against it.

1895 Haffkins of Odessa, when in London, persuaded the Netley Pathological Laboratory authorities to undertake innoculation with typhoid vaccine on those going to tropical countries.

1897 It was begun and since then largely used, especially in the army, railroads, hospitals, cities, schools and the Great War.

1896 The vaccine was first prepared by Sir A. E. Wright and Major D. Semple.

1896 Widal and Sicard introduced the agglutination test for typhoid.

1890-

1898 Wright innoculated over 3,000 soldiers in India and all forces in in the South African War.

1900-

1903 Sir Wright introduced preventive innoculation with the opsonic index as guide. He deserves credit for perfecting vacinne-therapy.

1912 Experiments begun in 1900 by Surgeon-General G. H. Tornay and F. F. Russell of the U. S. Army — resulted in vaccination of 20,000 by Major Russell with "absolute success." What a blessing this would have been to the Spanish - American war volunteers.

Thus now are a great many achievements being methodically wrought.

The scientific labors of Laveran, Sir Patrick Manson and Sir Ronald Ross demonstrated the cause and prevention of Malaria by destroying the mosquito and his breeding places. The economic importance of his observation may be estimated when it is stated that in 1900 — in Indian olne 4,919,591 deaths occurred from fever — mostly malarial.

In 1889, Reed, Carrel, Lasear and Agramonte, made the immortal demonstration in Cuba of transmissability of yellow fever by mosquitoes—as had been suggested by Carlos Finlay in 1881-2.

In 1901 Major W. C. Gorgas, as Chief Sanitary Officer began to screen yellow fever patients and destroy mosquitoes — thus freeing Cuba of the disease in three months for the first time in 150 years.

His next great sanitary triumph was the Panama Canal Zone. This "White Man's Grave" where 50,000 Frenchmen died was cleared in 16 months of Yellow Fever and other dangerous infections permitting the construction of the canal. Ships can now pass through this great continental divide in eight hours, while it formerly took 48 days to round Cape Horn.

How now are these few examples and numerous other *trail blazing* efforts to be utilized for the benefit of mankind? Through education. Let the printing press and the school be harnessed as chariots of publicity. *Teach all men the way, the how and the when* to save life, health and happiness through intelligent, co-ordinated action.

Let America, the great young giant continue to be a teacher and benefactor to all the world by systematically applying the principles of truth and health.

Think of the preservation of life, liberty property and pursit of happiness conferred not only on the Americans but upon all the wide world by the instrumentality of the ROCKEFELLER FOUNDATION. In its 1924 Annual Reports, President George E. Vincent said under the paragraph entitled "Servant of a Common Cause."

> This summary story of a year's activity records co-operation with thirty-two commonwealths of the United States of America and with seventy-seven other states and countries. Now and then someone has asked whether such aid from without does not imply a kind of condescension; whether the Foundation does not seem to covet the role of a corporate Mæcenas of medicine. This answer is that the very nature of the work precludes a feeling of Chauvinism and of patronage. To visit many countries, to note the things in which each excels, to meet men and women who are contributing to the world's store of scientific knowledge and skill, to learn of their plans and needs, to make easier the migrations and interchanges of scientists, to facilitate that commerce of ideas which enriches all lands — to have a share in all things is to realize that scientific progress, the development of education, the fostering of the fine arts, are not the work of one country or race but of continuous international intercourse. The Rockefeller Foundation within its chosen field seeks to share in this common task as a means of realizing the purpose of its charter, "the well-being of mankind throughout the world."

May the spirit of that Master Clinician and Teacher, Sir William Osler, continue to inform and inspire us.

In a copy of his address "A Way of Life" in Osler's Library is inscribed the following poem, "The Salutation of the Dawn*"

Listen to the Exhortation of the Dawn.
Look to this Day.
For it is Life, the very Life of Life.
In its brief course lie all the
Varieties and Realities of your Existence;
The Bliss of Growth,
The Glory of Action,
The Splendour of Beauty;
For yesterday is but a Dream
And tomorrow is only a Vision;
But to-day well lived makes
Every Yesterday a Dream of Happiness,
And every Tomorrow a Vision of Hope,
Look well therefore to this Day.
Such is the Salutation of the Dawn.

*Said to be from the Sanskrit. The poem was published, as an inserted frontispiece, in "Words in Pain," Lond., G. M. Bishop, 1919. Dr. Wm. Osler expressed in a pencil notation his great admiration for this classic.

DIPHTHERIA*

CHAS W. FISK, M.D.
KINGFISHER

Having encountered difficulties and hardships on a long journey, we may be encouraged by reviewing the obstacles we have already surmounted and go on our way with renewed confidence and assurance. It is in this spirit that I shall present this paper.

The first serious disease that came under my observation as a child was diphtheria. The picture, with all its tragic details, was indelibly stamped upon my mind. There was no quarantine, no separation of the sick from the well.

Visitors were allowed to come and go at will. The disease was epidemic and the mortality was high. It was believed to be contagious in some mysterious sort of way, but no measures were taken to stay its progress. The medical text books were silent on this very important subject.

Heroic measures were used to remove the offending membrane. Active caustics of many kinds were applied, which were of little benefit but rather favored the spreading of the false membrane and increased the toxemia.

With a better knowledge of the cause of the disease measures were directed toward the destruction of the infecting germs. Solutions were employed by means of the applicator or spray and some of the most active poisons were given in large doses, that the blood might be made toxic to the pathogenic bacteria.

*Read before the Section on Obstetrics and Pediatrics, Annual Meeting, Oklahoma State Medical Association, Oklahoma City, June 22, 23, 24, 1926.

That this treatment was not satisfactory is plainly shown by the long list of drugs which were employed.

If the remedies used for the cure of a disease are numerous, it is presumptive evidence that none of them have been satisfactory. When the disease was of a mild type and progressed favorably, the last remedy used was likely to receive credit for the favorable termination.

The malignant type followed its course to a tragic ending unmodified by any treatment. I heard Dr. Knox of Rush state that he had treated thirty consecutive cases of diphtheria without a single fatality. He had recently visited a little boy of a family of three children. The other two were sent away from home at once. He said "The first one has died. One of the others now has diphtheria and he will die. The third one will be stricken by it and he too will die. Gentlemen, this is diphtheria."

In company with an older physician I visited two little girls who had diphtheria. Neither of us had seen them before and they were not believed to be seriously ill. He predicted that one would die the following night, that the other would not live through the next day and that the third and only child of the family left would probably fall a victim to the disease. All of which followed in regular order.

These incidents are related that we may be reminded of the feeling of utter helplessness experienced, when we encountered certain types of diphtheria.

We welcomed antitoxin as a possible specific. At the meetings of this association there were many heated discussions before the final conclusion was reached that our faith was well founded.

We have witnessed very encouraging changes. With efficient quarantine the incidence of the disease has been greatly reduced. We should never witness such wide spread epidemics as have been encountered in the past. The mortality rate has been greatly reduced, and should be lowered still further.

An early diagnosis is important both to limit the spread of the disease and to secure the best results from treatment. We were taught to make a diagnosis from appearances alone, to differentiate diphtheria, pseudo-diphtheria and follicular tonsillitis. That this cannot be satisfactorily done is demonstrated by experience. We occasionally find a diphtheric paraly-

sis when the diagnosis had been a tonsillitis or a mild sore throat. A nasal discharge may indicate the characteristic infection when there is nothing in the appearance of the throat to point to the correct diagnosis. The only safe rule of practice is to give the patient the benefit of the doubt.

Membranous croup is diphtheria and should be treated as such. Other infecting organisms may occasionally cause the same symptoms, but as a working rule there will be few mistakes made in adhering to this practice. A croup that cannot be diagnosed as spasmodic laryngitis beyond the possibility of a doubt, demands antitoxin immediately and in sufficient doses. In such cases delays are dangerous.

The use of diphtheria antitoxin is delayed by some from fear of sensitizing the patient. Some do not give the prophylactic dose when there has been a direct exposure to infection, but prefer to await the development of the disease, before giving the antitoxin.

In our early experiences we gave little thought to the anaphylactic reaction. We probably observed some of the milder types, but they attracted little attention. The severe reaction is fortunately not common, but when it does appear its onset is sudden and its symptoms are alarming. I reported one such case to this association several years ago. Only a small per cent of those to whom antitoxin has been administered are sensitized. However, before using it, careful inquiry should be made and if any of the serums have been previously given, or if there is any other indication that there may be a sensitization, the antitoxin should be administered cautiously.

Because of the increasing number of antitoxic serums which are coming into general use, it is essential to remember that horse serum sensitization may be induced by any of the antitoxins which contain it, and that it is specific for that particular serum whether it is in the diphtheritic or any other antitoxic serum.

It may be worth while to proceed with care when the toxin antitoxin has been used for immunization. In the early studies of anaphylaxis it was observed that guinea pigs were readily sensitized by the most minute doses of serum.

It has been reported that toxin antitoxin will occasionally induce a hypersensitiveness. We may confidently expect that both the antitoxin and the toxin antitoxin will be so modified that the danger of sensitization will be eliminated.

Then the immunization of young children will be more systematically practiced, and they will be protected from diphtheria and membranous croup until they have passed the age of greatest danger.

In a period of time within my memory greater progress has been made in the diagnosis and treatment of diphtheria than was made in all the preceeding centuries.

The knowledge of prophylaxis enables us in most cases to confine it to very narnow limits.

Perhaps in coming years diphtheria will be known only as a chapter in the history of medical progress.

Discussion: HARRY BREESE, M.D., HENRYETTA.

The essayist wisely left the discussion of the different types, diagnosis, and the pathology to the text books. However, it was about 1883 and 1884 that Klebs and Loeffler, at about the same time, were doing research work to teach the world that a certain kind of bacillus was the enemy to fight.

Since we have a specific, if properly used at the right time, it is then our duty to keep discussing the subject from time to time until the public will co-operate with our efforts to immunize the possibility of infection or contagion.

Therefore, we should keep in mind to the public, the Schick test, toxin-antitoxin, and carriers. Thousands of tests by the Schick method have proved that about two-thirds are immune, and that the toxin-antitoxin treatment or vaccination will immunize the balance.

The co-operation of the public with the doctors in some localities has almost stamped out diphtheria by their practicing the Schick and toxin-antitoxin method. On this encouraging point I will quote a few results obtained in the references: SOUTHERN MEDICAL JOURNAL, July, 1920, Dr. Sidbury of Wilmington, N. C., describes how this loathsome and dreaded disease was practically wiped out. As far back as May, 1916, Dovie Murrie Couie, Ann Harbor, Michigan, published AMERICAN JOURNAL DISEASES OF CHILDREN

with elaborate statistics, the great value of these preventative measures. And, he remarked that families usually run the same tests. If one child was positive or negative the rest of the family usually tested the same.

Of course, it is evident that it is possible, with the co-operation of the school officers and parents, to win the victories already mentioned. But, the fact remains, that those below school age give the largest percent of positives to the Schick test. And, by proper legislation for co-operation, this alarming disease could be stamped out.

Many children of school age, as well as adults, are carriers, and, if they are rendered sterile or immune, the chances for infection to the younger children are nil.

The adult carrier remains to be considered, and, especially for the last six years, they have been given many different kinds of treatments in order to render them safe to mingle with the public.

A carrier used to be considered a carrier, and nothing more. But, it is now known that he may, at any time, be diagnosed with a clinical case of diphtheria. Therefore, the importance of our advocation to the public and the law-makers, the necessity of following up all known convalescent cases of diphtheria in order to be sure that they do not remain carriers. Of course, it is evident that one may be a carrier, who has never been diagnosed clinically. But, if all others were eliminated, there would not be much demand for antitoxin.

Some carriers have peculiar manifestations. Dr. M. Gerson, in the MEDICAL INTERPRETER, number 1, states, from Berlin, paralysis of various kinds, of the eye muscles, of the muscles of deglutition, of one arm or both legs, for which he could not discover any apparent cause. He found that nine of these cases were bacillus diphtheria carriers. He frequently swabbed out the nose with tincture of iodine and used peroxide of hydrogen for a gargle. All these cases were cured after they had been freed of the bacilli. Though he used, at the end of six weeks, twelve to fifteen thousand units of serum for three consecutive days. At first, this serum aggravated the paralytic symptoms but they soon disappeared entirely. Diphtheria, in the form of ulcers, may exist for months, the scrotum, ear, vulva and thighs, especially. T. A. Gray and J. B. Meyer, U. S. Naval Hospital, Mare Island, JOURNAL OF INFECTIOUS DISEASES, April 1921, had an outbreak of diphtheria. From five hundred forty-four Schick tests, seventy-four were positive. They were given one thousand units of antitoxin, and later, the toxin-antitoxin vaccination of six hundred eighty persons showed one hundred sixty-two were carriers. These authors treated ninety carriers with mercurochrome, one half, one, and two percent strengths. Eighty-eight of the ninety were made carrier-free by nineteen treatments. Here is a good place to say that toxin-antitoxin is slow and that it takes four to six weeks for its action to immunize. But, after immunization has taken place, it lasts from four years to a life-time.

There is a difference between the convalescing positive throat and the true diphtheria carrier. The latter is harder to render inert. Fifty cases, reported from the French literature in number four of the MEDICAL INTERPRETER, explain how those carriers were freed from possible danger by hot-air currents from a common electrical drying apparatus through a metal ferrule 5 cm. in length. This could be moved in any direction. Ten to fifteen minutes with intermissions each treatment for three to five days effected a cure. As I understand it, there is no law to isolate carriers. However, if a carrier proves to be sufficiently virulent to cause contagion, the State Superintendent of Health can bring pressure to bear for quarantine. It is estimated that New York has twenty-five to thirty thousand carriers.

There is scarcely any excuse for argument on treatment. All progressive doctors agree that antitoxin should be given, with but few clinical exceptions, intramuscularly or intravenously. Five thousand units intravenously is equal to about twenty thousand subcutaneously. And, if the diagnosis is made early, not waiting twenty-four hours for laboratory report, one dose intravenously of three thousand units will often effect a cure.

Since the writer has lost but one case of this dreadful disease, it is obvious that he has not treated a very large number. However, he believes that case should have been saved by his following up the French advice in treating the paralysis. My diag-

nosis the first visit for this ten-year-old girl was a three-days pharyngeal membrane. My having no records of this case, is why I cannot be positively exact as to dosage and time. I will say that there was one intravenous five-thousand units dose and two of the same amount, intramuscularly, over a period of three days. At the end of five days, she was discharged practically well. Her appetite was good; dined at the family table seven days, no fever, but she still had each tonsil covered with a thick membrane. And, in about ten days after I thought she was out of danger, a progressive paraplegia began from the feet and terminated life in about three days.

This was a country Italian family and allowed the child to exercise more than directed, but her doctor should have kept up, perhaps, at this time, subcutaneously, the antitoxin and throat treatments till that membrane sloughed, and especially after the paralysis began, pushed the treatment. But, I feel that the follow up treatment mentioned would have prevented the paralysis and thereby saved a life.

SUPREME COURT UPHOLDS AMERICAN DRUGS

A decision of the highest importance to every physician, pharmacist, drug manufacturer and, in fact, every user of drugs in the United States was rendered by the Supreme Court of the United States on October 11, 1926, when this highest tribunal of the Nation declared that the Chemical Foundation has been acting legally and properly in the purchase of the foreign drug and chemical patents, during the War and licensing American Manufacturers to produce these essential substances in this country.

The sale of the German patents to the Chemical Foundation took place during President Wilson's administration and had, without doubt, a distinct influence upon the outcome of the War, because this transfer permitted American concerns to begin at once the production of various drugs and chemicals which had, theretofore, been made only in Germany, and whose importation ceased with our entry into the war.

President Harding, apparently laboring under some misapprehension as to the purposes and functions of the Chemical Foundation directed that suit be brought by the Government to set aside the sale of these patents to the Foundation.

The case was first tried in the Federal District Court of Wilmington, Del., and resulted, after weeks of evidence taking, in a finding against the Government on all points.

The case was appealed to the Circuit Court, which upheld the decision of the District Court in every particular.

A final appeal carried the question to the Supreme Court of the United States, where evidence was heard more than a year ago. The long delay in rendering a decision has afforded time for mature consideration. The Court has decided unanimously that the sale to the Chemical Foundation was valid and legal and that the Foundation has made no improper use of the powers which it thus acquired.

This decision is a momentous one for everyone who has anything to do with drugs and chemicals in any way whatever.

To the physician it means that he will have a steady regular supply of reliable drugs, of American manufacturers, which can never again be upset or cut off by the vicissitudes of war. The same considerations apply to the pharmacists. Among the vitally necessary drugs affected may be mentioned the arsphenamines, cinchophen, barbital, the flavines, procaine and a host of others.

To the drug manufacturer, who has invested thousands of dollars in apparatus for the manufacture of drugs and chemicals under the Foundation's licenses, it means relief from a certain degree of anxiety (though the outcome of the case could scarcely have been in doubt) and a tremendous inspiration to further investigations looking to the production of more and better drugs and chemicals for America.

To the nation at large, it means that reliable medicines will continue to be sold at reasonable prices; and, more or less indirectly, that the dye industry of America which is now in a flourishing condition, thanks to the Chemical Foundation, will be available for government uses should we become involved in another war.

Nor are medicine and pharmacy the only lines of endeavor affected by this momentous decision. The steel and packing industry and many others will be vastly benefited by the freedom of chemical investigation and activity which is now assured them.

Word has been received from the Dermatological Research Laboratories that they appreciate the patronage given to the D.R.L. Arsphenamines by physicians in this State.

These products have been advertised in this Journal for some time and it is gratifying to know that the readers have taken cognizance of the support of the advertisers. Also, that they are aware of the quality, safety and therapeutic efficiency of the Dermatological remedies for syphilis, which were the first to be made in this country and supplied to the physicians of America when the world war was in progress.

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EDITORIAL

MEETING THE CANCER PROBLEMS.

Apparently no advance worth while in the prevention or control of cancer, other than those already appreciated, were made or proposed by the recent Mohonk Conference on Cancer. This conference was attended by representatives from every great organization engaged in the prevention, control and treatment of cancer, as well as many of the world's most brilliant medical and surgical minds, whose work naturally places them also in commanding positions to observe the ravages of cancer and by such observations authorized them to make pertinent suggestions for further vigilance and energy if we are to even hold what little gains have been made.

Resolutions, two only, were adopted: one proposing an international federation to further similar meetings as this conference and publication in at least three languages an index and abstracts of all papers on cancer which appeared anywhere in the world. The other resolution, and one of importance to the average physician so often bombarded by "New Cancer Cures," was the adoption of a statement of facts and opinions upon which campaigns against cancer should be conducted. The resolution, in substance, is as follows:

Causation is not completely understood, but it may be accepted that it is not to be looked upon as contagious or infectious.

Cancer itself is not hereditary, although a certain predisposition or susceptibility is apparently transmissible through inheritance. This does not signify that because one's parents, parent or other member of the family suffered from cancer, cancer will necessarily appear in other persons of the same or succeeding generations.

The control of cancer, so far as understood at the present time, depends upon the employment of personal hygiene and certain preventative and curative measures, the success of which depends, in turn, upon the intelligent cooperation of patient and physician.

Persons who have cancer must apply to competent physicians at a sufficiently early stage in the disease in order to have a fair chance of cure. This applies to all forms of cancer. In some forms early treatment affords the only possibility of cure.

Cancer in some parts of the body can be discovered in a very early stage, and if these cases are treated properly the prospects for a permanent cure are good.

The cure of cancer depends upon discovering the growth before it has done irreparable injury to a vital part of the body and before it has spread to other parts. Therefore, efforts should be made to improve the methods of diagnosis in these various locations and the treatment of the cancers so discovered.

The public must be taught the earliest signals of cancer which can be recognized by persons without a special knowledge of

the subject, and induced to seek competent medical attention when any of these indications are believed to be present.

Practitioners of medicine must keep abreast of the latest advances in the knowledge of cancer in order to diagnose as many as possible of the cases of cancer which come to them.

Surgeons and radiologists must make constant progress in the refined method of technic which are necessary for the diagnosis and treatment not only of ordinary cases but of the more obscure and difficult ones.

There is much that medical men can do in the prevention of cancer, in the detection of early cases, in the referring of patients to institutions and physicians who can make the proper diagnosis and apply proper treatment, when the physicians themselves are unable to accomplish these results. The more efficient the family doctor is, the more ready he is to share responsibility with a specialist.

Dentists can help in the control of cancer by informing themselves about the advances in the knowledge of the causes of cancer, especially with relation to the irritations produced by imperfect teeth and improperly fitting dental plates. They can also help by referring cases of cancer which they discover to physicians skilled in the treatment of cancer in this location. It may be doubted whether all dentists fully realize the help which can be obtained from X-ray photographs in revealing not only the state of the teeth but the condition of the bone surrounding them.

Medical students should be instructed in cancer by the aid of the actual demonstrations of cancer patients, and this to a sufficient extent to give them a good working knowledge of the subject.

The most reliable forms of treatment, and, in fact, the only ones thus far justified by experience and observation, depend upon surgery, radium and X-rays.

Emphasis should be placed upon the value of the dissemination of the definite, useful and practical knowledge about cancer, and this knowledge should not be hidden or confused by what is merely theoretical and experimental.

Efforts toward the control of cancer should be made in two principal directions: (1) the promotion of research in order to increase existing knowledge of the subject, and (2) the practical employment of the information which is at hand. Even with our present knowledge many lives could be saved which are sacrificed by unnecessary delay.

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Editorial Notes—Personal and General

DR. J. W. CREWS, Stringtown, has moved to Adamson.

DR. T. A. RHODES,Cherokee, has moved to Titusville, Florida.

DR. O. A. KIRBY, Marietta, made a trip to Michigan recently.

DR. W. A. FUQUA, Grandfield, recently attended the Mayo Clinics.

DR. H. B. AMES, Alva, is doing post-graduate work at Tulane University.

DR. T. A. HARTGRAVES, Okmulgee, has moved to the Atlas Life Building, Tulsa.

DR. H. L. RAINS, Okmulgee, spent his vacation in October taking in the Mayo Clinics.

DR. A. R. HOLMES, Henryetta, recently attended a family reunion at St. Joseph, Mo.

DR. A. H. TAYLOR, Guthrie, suffered a broken arm last month, while cranking his Ford car.

DR. HUGH D. SITES, U. S. Veterans Hospital, Muskogee, has been transferred to the Marine Hospital No. 13, Mobile, Alabama.

DR. A. L. GUTHRIE, Oklahoma City, recently took several weeks' bronchoscopic work with Dr. Chevalier Jackson at Philadelphia.

DR. WILLIS K. WEST, Oklahoma City, was called to Shreveport, La., recently, by the death of Mrs. West's father, L. K. McGuffin.

COMANCHE COUNTY MEDICAL SOCIETY met October 18th, at Lawton, Dr. James F. Cooper, New York, being the principal speaker, his subject being "Birth Control Methods."

DR. and MRS. J. W. FRANCISCO, Enid, announce the marriage of their daughter, Eva, to Mr. Harry Moreland on October 16th, at Enid. The couple will be at home in Ponca City.

ROGERS COUNTY MEDICAL SOCIETY met October 25th, at the Memorial Hospital, Claremore; the program: Dr. Charles D. Johnson, Tulsa, "Intestinal Obstruction", and Dr. Benjamin Morgan, Tulsa, "Anaesthesia".

McINTOSH COUNTY MEDICAL SOCIETY met October 19th, at Checotah, with the following program: Lecture on Tuberculosis, with film exhibit, by Dr. E. Levy, U. S. Veterans Hospital, Muskogee, and a report of cases.

DR. F. B. ERWIN, Wellston, has moved to the Medical Arts Building, Oklahoma City.

DR. and MRS. J. T. BOND, Tahlequah, recently visited their son at Anderson, Missouri.

DR. H. A. LILE, Cherokee, visited some of the hospitals in Chicago and St. Louis, recently.

DR. JOSEPH T. PHELPS, El Reno, has moved to the Medical Arts Building, Houston, Texas.

DR. and MRS. A. L. BLESH, Oklahoma City, are making a month's trip to Canada and other Northern points.

DR. FRED PRIESTLEY, Frederick, is undergoing medical treatment at the Baptist Memorial Hospital at Memphis.

DR. J. I. HOLLINGSWORTH, Stroud, has moved to Waurika, and is associated with Dr. D. B. Collins in the Waurika Hospital.

DR. W. P. FITE, Muskogee, attended the Clinical Congress of American College of Surgeons at Montreal in October, and stopped at Boston to visit his brother, Dr. E. H. Fite, at the Boston General Hospital.

DR. CLAUDE A. THOMPSON, Muskogee, will attend the annual meeting of state officers and editors of the various component state associations of the American Medical Association, at Chicago, November 19 and 20.

DOCTOR GEORGE W. JOBE

Dr. G. W. Jobe, for many years a practitioner at Wagoner, died September 3rd, the immediate cause of death being hemorrhage of the stomach, he had suffered from stomach trouble for several years.

Born at Yellville, Arkansas, September 30, 1872, after attending the common schools of that state, he graduated from Marion-Sims Medical College in April, 1897, later doing special work at Vanderbilt. He practiced for a time in the Hawaiian Islands, serving as Acting Assistant Surgeon, Public Health and Marine Hospital Service. He served on one of the Federal Medical Examining Boards and the Pension Board in Indian Territory days, and during that term of service endeared himself to his many professional associates. Dr. Jobe was a man of serene, judicial mind and possessed of an unusually high degree of personal courage. These attributes made him host of friends and admirers. He was ever ready to perform his mission of help and mercy, regarding financial gain as a secondary matter. A member of the old Indian Territory medical organization, he became a member of his county and state organizations on amalgamation and was a member until his death. He is survived by a wife, mother and three sisters. Interment was made at Wagoner under the auspices of the Methodist Church and the Masonic order.

DOCTOR FRED F. FULTON

Dr. Fred Fulton, Oklahoma City, died September 15th, at a Memphis Hospital after an attack of indigestion. He had been in ill health for some time. Born at Cedar Vale, Arkansas, December 28, 1883, he received his preliminary education in Hot Springs, after which he graduated from the Memphis Hospital Medical School in 1906. He later attended the New York Postgraduate, after which he located in Hot Springs, practicing there in 1906-7 and 8, after which he located in Oklahoma City in 1909, in association with his brother, Dr. George Fulton, until his death.

Dr. Fulton was a 32nd degree Mason, Shriner and Elk, and a member of the Methodist Church. Interment was made at Fairlawn Cemetery, Oklahoma City, under the auspices of the Methodist Church and the Masonic order.

EYE, EAR, NOSE and THROAT

Edited by Jas. C. Braswell, M. D.
726 Mayo Bldg., Tulsa

Recent Mechanical Injuries to the Eyes; Their Examination and Management., Jackson, S.: Northwest Med., 1926, xxxv, 138.

Jackson calls attention to the fact that the effects of contusions of the eyeball may be unrecognized in a superficial examination because external evidence of grave internal lesions may be absent, and that there may be no evidence of serious trouble at the first ophthalmic examination because such injuries as fracture of the orbit do not immediately affect the eyes. Contusions may cause cataract without rupture of the capsule, but the opacity may not be noted for months. The examination following a contusion should therefore include inspection, palpation for changes in tension, and X-ray examination for fractures and foreign bodies.

Perforating injuries may have few external signs upon which the diagnosis may be made. Small wounds close quickly, many parts do not bleed, and the tension may be restored in a few hours. Two lacerations may occur from the same accident, as when a shot passes through one side and out the other. The nature of the missile and the direction from which it came should be determined. The presence or absence of a foreign body must be established definitely. Because of the long exposure made so frequently in roentgen ray examinations, foreign bodies may not be detected by the X-ray if they are very small. As a rule all foreign bodies in the eyeball should be removed as soon as possible. The conditions under which a departure from this rule may be considered are very rare.

The Operations for Glaucoma., Durr, S. A.: Am. J. Ophth., 1926, 3 s. ix, 174.

This report was a theisis submitted for the degree of M. S. in Ophthalmology at the University of Pennsylvania. The better known operations

for glaucoma are compared as to their value in different types of cases, and an attempt is made to determine the best operation for each type of glaucoma. The conclusions are based upon a survey of the literature.

Iridectomy, trephining, iridotasis, and cyclodialysis are fully covered, while the Lagrange operation, peripheral iridotomy, iridencleisis, and cyclectomy are discussed briefly. The use of adrenalin in glaucoma as compared to posterior sclerotomy is reviewed.

The conclusions drawn from fifty-eight original articles are as follows:

1. No one operation can be used in all cases.

2. In acute glaucoma the procedure of choice is iridectomy, with the use of adrenalin or a preliminary posterior sclerotomy, if needed. Trephining or iridotasis is permissible.

3. The Elliott trephine should be used in chronic non-congestive glaucoma, especially with contracted fields. Iridotasis may be done. Cyclodialysis may be tried first, the trephine being reserved for resistant cases.

4. Iridectomy should be performed in glaucoma due to swelling of the lens.

5. Buphthalmos is best combated by trephining or repeated posterior sclerotomies.

6. Cyclodialysis should be used in glaucoma due to disease of the retinal vessels and may be done in the cases of patients who have chronic conjunctivitis.

7. Adrenalin has been found of value in ophthalmoscopic examination, as a therapeutic agent, and an aid in operation.

Intra-Orbital Anaesthesia., Icove., M. D.: Ophth., 1926, 3 s. ix, 260.

Icove states that intra-orbital anaesthesia would be employed more frequently in ophthalmic surgery if the technique were more generally known and the safety of the procedure more generally recognized.

The temporal floor of the orbit contains no important structures. The nerves to be blocked are the long and short ciliary nerves, which are best reached just anterior to the ciliary ganglion from which the short ciliary nerves arise. The long cilary nerves are branches of the nasociliary nerves. Conduction anaesthesia of the cornea, sclera, and iris is induced by the perineural injection of the anaesthetic.

Before the operation is begun, time must be allowed for the absorption of the anaesthetic. The author has found 4 per cent novocain and adrenalin solution most satisfactory. The amount used varies with the procedure. A 2-c. cm. syringe with a 22-gauge needle 5 cm. long is employed. The needle is inserted through the skin, at the lower outer border of the orbit and passed up and in to avoid the orbital floor, between the external and inferior rectus. The entire amount of the anaesthetic is injected into the eye at once.

The operation may be performed from one-half to one hour later. The latter interval is indicated in cases of acute glaucoma. One thousand injections have been made of amounts of anaesthetic ranging from ½ to 4 c. cm. without toxic effects. A few of the patients have experienced nausea as the result of nervousness. In the one case in which an intra-orbital hemorrhage occurred, the operation was postponed five days and then performed without itra-orbital anaesthesia. Intra-ocular tension is increased from 5 to 10 mm. by the increase in the volume of the orbital contents.

The technique for the various operations is as follows: Cataract: ½ c. cm. given itra-orbitally, a modified Van Lint injection of the lids, several drops of cocaine in the cul-de-sac. Glaucoma: In acute cases, from ½ to 3 c. cm. given intra-orbitally. Enucleation: An intra-orbital injection of 3 or 4 c. cm. plus a sub-conjuntival injection and delay of the operation for three quarters of an hour.

The method is employed also with the use of Shahan's therm phore and for sub-conjunctival injections of mercury, cyanide of mercury, sclerotomy, evisceration, and the removal of foreign bodies. In operations for squint, the pain from traction on the muscles is not relieved and there may be a temporary paresis of the external and inferior recti which disturbs the relations.

Puncture of the Maxillary Sinus., Ruskin, S. L.; Laryngoscope, 1926, xxxvi, 119.

Hyperplastic Maxillary Sinusitis., Mithoefer, W.; Laryngoscope, 1926, xxxvi, 137.

Ruskin states that while puncture of the maxillary sinus is a most important aid in the diagnosis and treatment of maxillary sinusitis, it is frequently avoided because of the difficulties and complications incident to the usual technique. In order to proceed properly, a thorough knowledge of the anatomy of the maxillary sinus and lateral wall of the nose is essential. Ruskin describes the anatomy in some detail and illustrates his description by photographs and schematic drawings.

Attention is directed to the antrum mucosa which is thin and loosely connected with the bone by a thin submucosa. "Dilated veins, when they occur, are most usually found on the roof of the antrum or on the medial wall. This point is not sufficiently considered in puncture of the antrum. If a heavy blunt trocar is forced through the bone of the inferior meatus, it can lift the mucosa off the antrum wall instead of piercing it. The fluid or air is then injected into the submucosa, causing the complications reported incident to this procedure."

Puncture through the inferior meatus is preferred.

Ruskin calls attention to a special antrum needle which he described in the Laryngoscope for February, 1924, together with a technique for its use. This needle was constructed to counteract the dangers and difficulties of antrum puncture and in a series of several hundred antrum punctures was found safe and easy to use. It may be employed also for bacteriological study of the antrum contents.

In conclusion, Ruskin emphasizes the importance of the role played by maxillary sinusitis in the production of nasal obstruction, chronic laryngitis, and bronchitis in children.

Mithoefer cites the fact that while it has been known for many years that nasal polypi are an extension of a primary disease in the antrum, hyperplasia of the antrum without extension of polypi into the nose has not been recognized very often. He describes a form of hyperplastic dis-

ease of the antrum in which there are few if any pathological changes in the nasal mucosa, namely, primary hyperplastic maxillary sinusitis.

Hyperplastic maxillary sinusitis if of the following four types:

Antrum hyperplasia with extension of polypi into the nose, combined with suppuration.

Antrum hyperplasia with extension of numerous polypi or a solitary polyp into the nose, but without a purulent discharge.

Hyperplasia of the antrum without extention of polypi into the nose and with or without mild pathological changes in the nasal mucous membrane and the other sinuses (primary hyperplastic maxillary sinusitis).

Hyperplasia of the recesses of the antrum only (recess hyperplasia).

Following a discussion of the pathology and symptoms, the author draws the following conclusions:

1. Maxillary sinus hyperplasia was always found when an extensive nasal polyosis was present.

2. Hyperplasia of the antrum may be present many years without causing symptoms referable to the antrum.

3. The failure of the removal of pathological changes in the nose to give relief should direct attention to the antrum.

4. Hyperplastic ethomiditis of a mild type may be associated with gross hyperplastic changes in the maxillary sinuses.

5. The roentgenogram will be found of aid in arriving at a conclusion as to the advisability of exploring the antrum.

6. An exploratory opening is often the only means of determining the presence or absence of hyperplastic changes within the cavity of the antrum.

7. Hyperplastic changes in the antrum are present more often than has been hitherto suspected.

8. If the possibility of antrum hyperplasia were always borne in mind and the cavity investigated before the performance of an intranasal sinus operation, the results of intranasal sinus surgery would be more satisfactory.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M. D.
717 North Robinson St., Oklahoma City

Epiphysitis—Editorial, Am. Jour. Roentgenol., XV, 446, May, 1926.

This editorial is mentioned here, not because it contains any new additions to our knowledge of the subject of epiphysitis, but because it calls attention to the valuable abstracts that are appearing in subsequent numbers of the American Journal of Roentgenology, of recent articles collected from all sources regarding this condition. According to the Editor, epiphysitis is a true disease entity, of unknown origin, but distinct from tuberculosis, syphilis and rachitis. Among the diseases classified under the head of epiphysitis, or osteochondritis, he includes: (1) osteochondritis deformans juvenilis (Legg-Clave-Perthes disease,) (2) epiphysitis of the tibial tubercle (Osgood-Schlatter's disease), (3) epiphysitis of the tarsal scaphoid (Kohler's disease), (4) epiphysitis of the head of the second metarsal (also called Kohler's disease), (5) vertebral epiphysitis, (6) epiphysitis of the os calcis, (7) epiphysitis of the olecranon, (8) epiphysitis of the various epiphyses of the ilium, (9) malacia of the semilunar bone, (10) osteochondritis dissecans of Konig.

Acute Knee Joint Injuries—C. J. McGuire, Jr., Ann. Surg., LXXXIII, 686, May, 1926.

This is a report of cases occurring in Bellevue Hospital during the past five years. They are classified as follows:

1. Synovial membrane-acute synovitis and suppurative synovitis. One supurative case cleared up completely in eight days after three aspirations. Willem's treatment was tried in nine cases; five obtained full function, one partial function, one complete ankylosis, two amputations.

2. Ligaments—with thirty degree flexion and sufficient period of immobilization the crucial ligaments will heal with good function. He does not consider the Hey-Groves operation justifiable. Suture of the internal lateral ligament, with fascial reenforcement if necessary, is successful. Suture of the quadriceps tendon and ligamentum patellae gave good results.

3. Intra-articular fibrocartilage. Fifteen operated cases are reported. Eleven cases gave normal function, two did not report, but evidently were without disability when last seen, one developed postoperative phlebitis and developed an unstable joint, one complained of persistent pain.

4. Fractured patella. These were all operated upon if there was any separation. Twenty-five cases reported. One developed suppurative arthritis. Seventeen were operated upon; of these, fifteen cases followed up and reported complete function, one, seen only once, was doing well, one did not report.

5. Intercondylar eminence—four cases. Treated in thirty degree flexion for six weeks. One perfect function. Three complained of recurrent synovitis and pain on standing.

This is a most interesting article and a table of all the cases showing treatment and end-results is given.

Concerning the Etilology of Perthes' Disease and Koehler's Metatarse-Phalangeal Disease.—W. Brill, Arch. f. Orthopaed und. Unfallchir, XXIV, 1, January, 1926.

The author reports a family in which for six generations there occurred a disease in the hips among its members. It is a case of inherited constitutional anomaly. The primary symptoms in childhood are: stiffness in the hips, limitation of abduction and rotation with persistency of normal expansion and flexion. Pain is not complained of, as a rule. Around the fifteenth year there appeared the symptoms of limitation, limping, aching, which in previous years has been but of mild character and frequently overlooked. Up to the age of twenty-five, the condition gradually improves; it becomes stationary at the age of forty-five or fifty. The X-rays demonstrate process which seem to originate within the bone substance proper. These findings speak against an arthritis deformans juvenilis but lean more, ra-

diologically and clinically, towards the group of Legg-Perthes'. Analogous processes as in the hips are found in the heads of the first and second metatarsals and on the femoral condyles. In several instances, the hypoplastic constitution. It is difficult to point to a definite date of onset; neither can it be stated with certainty in what period the disease becomes aggravated. No emboli nor osteomyelitis be mentioned as causative factors. Disease of internal secretion may easily be suggested and accepted as a probability. The final results of all the cases were arthritis deformans in later years.

TUBERCULOSIS

Edited by L. J. Moorman, M.D.
912 Medical Arts Bldg., Oklahoma City

Tuberculosis—The Fifth Conference of the International Union Against Tuberculosis was in session September 20th to October 2nd, 1926, in Washington, D. C. Immediately following in succession came came the Twenty-first Meeting of the American Sanatorium Association and the Twenty-second Meeting of the National Tuberculosis Association.

In the International Conference it was gratifying to note the universal interest in the fight against tuberculosis and recognition accorded the United States because of the splendid results achieved.

Among the notable foreign delegates appearing on the program were the following: Prefessor Gaetano Ronzoni, of the University of Milan, Italy; Sir Henry Gauvain, Superintendent Lord Mayor Treloar Cripples Hospital and College, Alton, England; Dr. Edourd Rist, Co-Director Laennec Hospital, Paris, France; Dr. B. Weill-Halle, University of Paris, Paris, France; Dr. Frederich Neufeld, Director Koch Institute, Berlin, Germany; Professor Hans Christian Jacobaeus, Medico-Surgical Institute, Stockholm, Sweden; Dr. Marc N. Jaquerod, University Lausanne, Leysiu, Switzerland; Professor Frederich Muller, University Munich, Munich, Germany; Professor Vittorio Ascoli, University of Rome, Italy; Professor Leon Bernard, University of Paris. Paris, France; Dr. Julius de Daranyi, Budapest University, Budapest, Hungary; Dr. F. Jessen, Davos-Platz, Switzerland; Dr. P. C. Varrier-Jones, Cambridge, England; Dr. Vladimir Cepulic, Xogreb, Jugoslavia; Dr. Ernest Loewenstein, University of Vienna, Vienna, Austria; Dr. Hugo Selter, University of Bonn, Bonn, Germany; Col. S. Lyle Cummins, University of Wales, Cardiff, Wales.

One of the subjects demanding a great deal of discussion in these meetings was the question as to whether or not manifest tuberculosis in the adult is of endogenous or exogenous origin. The concensus of opinion, in recent years, has been in favor of endogenous re-infection from latent foci, acquired through childhood infection. Judging from this discussion, the pendulum is gradually swinging back and many students are ready to believe that exogenous re-infection may account for a certain percentage of the adult cases of active pulmonary tuberculousis.

It was generally agreed that there should be no change in our prophylatic methods. In spite of all the recent claims for new therapeutic measures rest was emphasized as the mainstay in the treatment of all forms of tuberculosis. Artificial pneumothorax and extrapleural thoracoplasty received due recognition. Sunlight and artificial light were freely discussed and admitted to be of great value in the treatment of tuberculosis of the bones, joints and glands and all forms of superficial tuberculosis. It is also of proven value in the treatment of intestinal tuberculosis. It has been shown that exposure of the body to moving air independent of sunlight, brings about marked muscular growth and development.

An interesting feature of the National Meeting was the presentation of the first Trudeau Medal to Dr. Theobald Smith. An inspiring service commemorating a great clinician and rewarding a great scientist.

UROLOGY and SYPHILOLOGY

Edited by Rex Bolend, B.S., M.D.
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Pharmacology of Arsenic—The truth is that little is known of the actual pharmacology of arsenic, outside of clinical demonstration, and in the minds of many physicians there is considerable confusion as to whether the value of salvarsan lies in its actual spirocheticidal ability or in its assistance in building up the resisting power of the blood, thus enabling the body to effectually overcome and neutralize the invading organisms. This confusion dates back to the period when salvarsan was first commercialized, and is largely due to the misleading propaganda put forward at that time by certain producers. Because of this confusion many practitioners fail to distinguish between a tonic dose of an arsenical derivative and the spirocheticidal dosage. As Kiefer has recently put it: "We must always bear in mind the fact, as originally pointed out by Ehrlich himself, that the action of salvarsan on the spirachetes is not that of a direct spirocheticide, but that a third factor existing in the body fluids is necessary. This appears to be a fixing agent comparable in a general way to the action of complement (which is non-specific), but which acts to complete the antigen amb.ceptor combination."

Iodine in the Treatment for the Syphilitic—The value of iodine as a therapeutic agent for the treatment of the syphilitic has long been recognized, but the exact pharmacologic action is still somewhat disputed, particularly of the effect on the circulatory system. Some claim it is a depressant while others claim it becomes a stimulant.

The greatest consideration of iodine is the rapid elimination by the body secretions. Cushny claim 65-80 per cent of the iodide appears in the urine during the first twenty-four hours. Sollmann says iodides are found in ten to fifteen minutes after ingestion, the maximum reached in two hours.

This of course is a serious drawback in antileutic treatment and any form of iodine which will be retained in the syphilitic tissue longer will be of more value.

Elemental iodine seems to answer these qualifications, since in contact with the organic substances and body fluids it is changed into iodate salts. These require only a very low acidity for

decomposing again releasing iodine and this acting as a catolytic agent. According to the U. S. Dispensatory this process takes the following course: "While organic matter is being oxidized by the oxygen set free from the decomposing iodate, the iodine slowly reforms iodates by the decomposition of water . The iodate so reformed, in contact with another portion of putrescible matter yields further proportions of free oxygen and iodine to act as before, and so on." The ultimate fate of elemental iodine, no doubt, is its elimination in the urine, in the form of iodides.

Tuberculosis of Urinary Tract, Abstracted J. A. M. A., September 25, 1926—Ruenberg analyzes 126 cases with nephrectomy and eighty-seven without, 1900-1922. In 55 per cent there had been symptoms from the urinary apparatus for more than a year before the tuberculous nature was suspected. The onset was insidious in 70 per cent; the first symptom was disturbance in micturition in 74 per cent; the pain in the lumbar region in 16.3 per cent, and hematuria in 5.8 per cent; in two cases syuria, and in three emaciation. The bladder was found normal in 33 per cent of these presenting "cystitis" symptoms as the first manifestation. Local measures against this "cystitis" are distinctly dangerous besides being useless. The urine reaction was acid in 96 per cent of the cases of renal tuberculosis; albuminuria and pyuria were practically constant. The irregular outlines of the pus cells, in contrast to pus from other infections, aided in the diagnosis (Colombini). In fifteen cases no bacteria could be found in the acid, pus-containing urine. He denies that this is pathognomonic for renal tuberculosis. On the other hand, tubercle bacilli can be elminated through the sound kidney. He reports a case that confirms this, both kidneys eliminating tubercle bacilli, but since removal of one kidney, the other has been functioning apparently perfectly. Fully 80 per cent of the nephrectomized were restored to health. One patient refused to allow removal of the kidney and she has spontaneously recovered—an instance of autonephrectomy. The disease has progressed in all the other cases without surgical intervention. In conclusion he warns to continue general treatment after the nephrectomy, as these patients are still tuberculous after removal of the renal focus.

The Spleen in Sypsilis—The frequency with which the spleen is involved in a general syphilitic infection—most often without manifesting any symptoms whatever—has been emphasized by Wile, although at the same time he pointed out that anemia occurring early in the course of the infection might be generally constitutional rather than splenic in origin. Many of Eason's cases of secondary syphilis showed a severe degree of oligocythemia, as well as poikilocytosis, anisocytosis polychromasia and punctate basoblasts, and in one case, eosinophil and neutrophil myelocytes were found in considerable numbers. In all the cases the color index was definitely above 1, with red-cell count of 1,000,000 and about 20 per cent hemoglobin, with grave anemia.

REPORT OF EXAMINATION FOR LICENSES TO PRACTICE MEDICINE

OKLAHOMA STATE BOARD OF MEDICAL EXAMINERS

Examination held at Senate Chamber, State Capitol, Oklahoma City, September 14th and 15th, 1926; number of subjects examined in, 12; total number of questions, 120; percentage required to pass, 75; written examination; no practical test; total number examined, 5; number passed, 5. The following applicants passed:

Name	Year of Birth	Place of Birth	School of Graduation	Year of Graduation	Home Address or Previous Location
Camp, Will	1882	Doyle, Tenn.	Vanderbilt	1918	Tulsa, Okla
Cooke, Charles Harold	1896	Hennessey, Okla.	Kansas Univ.	1924	Beggs, Okla.
Daves, John Thomas	1893	Baskerville, Va.	Maryland Univ.	1917	Danville, Va.
Marshall, Hal Ellsworth	1890	Elk City, Kan.	Kansas Univ.	1925	Blackwell, Okla.
Oldham, Ira Brown, Jr.	1900	Kirksville, Ky.	Tennessee Univ.	1925	Muskogee, Okla.
Rogers, Hugh Earl	1891	Milford, Texas	Texas Univ.	1917	Tulsa, Okla.
Sigler, Richard Roberts	1893	New Salisbury, Indiana	Louisville Univ.	1924	Wellington, Kan.
(Reichmann) Snyder, Ruth Catherine	1898	Rockport, Ind.	Michigan Univ.	1925	Rockport, Ind.
Winbigler, Bryce Rex	1878	Gerlan, Ill.	Illinois Univ.	1904	Aledo, Ill.
Shepard, Samuel Charlton	1899	Denton, Texas	Tulane Med.	1924	Tulsa, Okla.
Copeland, Carlos	1871	Houston Mo.	Barnes Med.	1906	Monette, Mo.
Hiner Bert Cecil	1879	Nebraska	K. C. Eclec. Med	1912	Stilwell, Okla.
Graham, Hugh Cornelius	1896	North Carolina	Rush Med. Col.	1926	Tulsa, Okla.
Hawkins, Eugene Wallace	1881	Georgia	Univ. of South Sewanee	1905	Anadarko, Okla.
Miller, Bradford Walter	1902	Omaha, Neb.	Neb. Col. Med.	1926	Oklahoma City,
Pickard, John Copeland	1900	Wabash, Ind.	Oklahoma Univ.	1926	Oklahoma City,
Warterfield Floyd Edward		Arkansas	Arkansas Univ.	1899	Muskogee, Okla.
Craddock, Clinton Cullen	1865		Meharry Med.	1895	St. Louis Mo.
Talley, Charles Newton	1899	Petersburg, Tenn.	Oklahoma Univ.	1923	Marlow, Okla.

BUREAU OF MATERNITY AND INFANCY
STATE DEPARTMENT OF PUBLIC HEALTH OF OKLAHOMA

LUCILE SPIRE BLACHLY, M.D., Director

During the past year nurses from the Bureau of Maternity and Infancy have either conducted alone or in co-operation with the teachers of Home Economics in the six Teacher Training Colleges twelve credit courses. Usually the courses consisted of eighteen (18) hours in theory and eighteen (18) hours of demonstrations. At the close of one of these combined courses the teacher of Home Economics asked the following questions:

(a) Of what value has the course in Child-Care been to you?

(b) Do you think Child-Care should be included in the public school curriculum?

The class as a unit answered the latter question in the affirmative.

Following are a few excerpts taken from the examination papers:

"A long time ago the mother would keep it a secret when she became pregnant but in 'Child Care, we are taught how important a physical examination is."

"An idea I have had regarding the embarrassment of going to a physician so early in pregnancy has been completely changed. Now, I realize that the mother should be proud that she is physically fit to reproduce, and should have this examination early to give her child the best possible chance to survive."

"I am sure I have derived more practical benefit from my course in 'Child Care' than from any other college course."

"I've been benefitted more by this course than any I have ever taken in college. It is more practical."

"The way the subject deals with the parts of the body is told in a manner that is not at all embarrassing but interesting and makes you want to know more."

"It has pictured marriage, home and motherhood to me in a more beautiful way than I have ever before seen it."

"This course will cause girls to realize what a wonderful business homemaking and motherhood is. It will lessen their desire for money making and commercial business and enable them to turn more to caring for homes and rearing children."

"I think one of the greatest advantages of the course is that it causes young girls to really appreciate babies and to look upon motherhood as a gift of God and not merely as an unwanted hardship."

"Place this subject in our curriculum and provide for a clean, competent lady to teach our girls to see the honor of motherhood, by teaching them how to prepare and care for themselves and baby before and after birth."

"I know of an instance where the mother never talked to her girl about such an important question, and when the girl needed advice she did not go to the right person to get it just because she did not know to whom she could go to confide in."

"It gives the inspiration to be the right kind of mother, and to raise better, healthier children. Another important reason is that teachers can reach the poor mothers out in their districts and give them their wealth of information which will be gladly received if the teachers are kind in their way of presenting it to them."

"This course in Child Care has so prepared me that I will be a more efficient and happy mother. I also have a greater desire to become a mother. It has lessened my fear of motherhood and fired my ambition to rear children so that they will have happy, wholesome, strongly developed minds and bodies."

"One objection that parents might make to adding this subject to the course of study may be 'that these girls would talk it over among themselves, and that they didn't need to know this yet, that they would learn from experience soon enough.' This is the very thing that we want done. These girls that might talk it over vulgarly would do so anyway and could not give nearly so much information as if they really knew."

"Many of our young girls marry while attending high school or soon after and many will be our mothers of tomorrow, little knowing or even giving a thought to what it will mean to them. They seem to walk into the sea of motherhood blindfolded, helpless little things. Why are they so ignorant of such things? It seems as if all are too modest or don't care to teach them the great importance of motherhood. What they know has come to them from vulgar sources, and when they learn they are to become mothers, they think of it as being a disgrace and not an honor which will mean more to them than all the riches in the world."

"By having this course in all our schools, the girls will get in a clean, wholesome way the things which they should know, for the safety of themselves as well as the next generation. If we do not offer this course to the girls they will find out in the wrong way."

"I have received many benefits from this course. Never did I know the vast importance of prenatal care as I have learned from this course. It has really been one of the most interesting and enjoyable courses I have studied. It is a course which no girl should finish school without having. But not only pleasure have I received, but things well worth knowing, remembering and practicing."

"I could never just sit down and write all the things which I have received from the course but I will give the most important ones. Little did I know about a baby in any stage. Never had I realized just how much depended on the mother having good health. The nurse made her demonstrations so plain that no one could fail to understand them."

"By reading the books I learned that a girl should be careful in choosing her mate and the reasons why. Little thought has been given to this subject heretofore, but now I shall stop and consider things before taking such a serious step.

If all the girls have found the course to mean as much to them as it has to me, there will be lots of homes happier and more babies live if the lessons of the course are followed."

"The introduction of 'Child-Care' in our educational institutions is one of the best means of reaching the mothers and fathers of our future generations. This information comes at the time when their minds are open to conviction, just the time to stamp upon them the importance of physical and mental well being. When they are once convinced of these needs their co-operation is secured without which no far reaching and permanent good could be hoped for."

"I think 'Child-Care' has been the most practical course I have taken in college. I feel that when I have the privilege of being a mother, I shall not be frightened or at a loss what to do, but will be confident that all shall be well and I shall know how to care for myself and baby. I have the desire and determination to raise healthy, happy children which can be done only if I keep my own body in that condition. This I intend by all means to do."

"Child-Care is not a study of dry nature, but is intensely interesting and is so closely associated with all of us that I think every girl should make a study of it."

"From this course I have learned to appreciate my mother and all mothers more."

"Every normal girl builds aircastles of the future, when she will have a wonderful husband and a happy home. No home is as supremely happy as it could be if there is not a a child in that home to center their love upon, to labor for, rear, and educate to the best of their ability.

"Then again, many mothers do not tell their girls what they should know. Many times they themselves do not know, and it is very necessary that the girl who expects to be a mother sometime, know how to care for herself, and give her baby a good birth. She owes this to herself, to her baby and to humanity."

"Under ordinary circumstances, the modern girl does not eat the proper food. If such a course were given to all girls, they would certainly have a better physical development and when the time came for them to be mothers, they would be better fitted for the test which is before them.

"I have come to realize that it is not such a dreaded responsibility to have the care of children. Many people look upon children as something horrible and something to be avoided. I think the course in 'Child-Care' gives you a much better appreciation of children and of the mother's duty to her children."

"Before I began the study of 'Child-Care' I had the old superstitious feeling that many people have not gotten away from. I thought that children should not be raised by a "doctor book." I thought mothers ought to know more about their own children than some doctor or nurse who had never seen them but a few times in their lives. I did not realize that these doctors and nurses had made a special study of mothers and babies all their lives, and that after all people are all alike in many ways. I had many superstitious ideas such as "marking the baby", the baby was born with hives, the baby had to be sick so much of the time, etc."

BOOK REVIEWS

"Practice of Physio-Therapy" by C. M. Sampson. —Over six hundred pages, one hundred forty-six original illustrations. Price, silk cloth binding, with gold stamping, ten dollars, 1926. Publishers, C. V. Mosby Co., St. Louis, Mo.

In the treatment of diseases, during the past few years, Physio-therapy has made rapid progress. No one has done more to advance its cause than Dr. Sampson, a physician of wonderful experience in this particular field. His latest book is well written, easily understood, and where indicated, suitable illustrations are used.

The text is divided into three parts:

Part 1. "Physics and Technic" contains twenty-three chapters. It reviews the different modalities used in the practice of Physio-therapy.

Part 2. "Clinical Application" contains seven chapters. In these, the author reviews case records, and results, and indicates most clearly where Physio-therapy is applicable.

Part 3. "General Considerations" contains four chapters dealing with troubles met in practice, adapting Physio-therapy to general practice or Hospitals, and the defining of technical terms used in the text.

It is a most valuable text book on a most important subject and should be on the tesk of the practicing physician and surgeon.

THE SURGICAL CLINICS OF NORTH AMERICA—(Issued serially, one number every other month). Volume VI, Number III (Chicago Clinic Number—August, 1926); 324 pages with 101 illustrations. Per Clinic year (February, 1926, to December, 1926). Paper, $12.00; cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

THE SURGICAL CLINICS OF NORTH AMERICA—(Issued serially, one number every other month). Volume VI, Number IV (Mayo Clinic Number—October, 1926); 274 pages with 91 illustrations. Per Clinic year (February, 1926, to December, 1926). Paper, $12.00; cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.